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EXAMINER

PUENTE, EMERSON C

ART UNIT	PAPER NUMBER
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2113

DATE MAILED: 04/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/027,013	<b>Applicant(s)</b> ROWE ET AL.	
	<b>Examiner</b> Emerson C. Puente	<b>Art Unit</b> 2113	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-35 and 37-52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20,28,34,45-49,51 and 52 is/are allowed.
- 6) ☒ Claim(s) 1-7,9-19,21-27,29-33,35,37,38,40-44 and 50 is/are rejected.
- 7) ☐ Claim(s) 39 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

This action is made **Final**.

Claims 1-7, 9-35, and 37-52 have been examined. Claims 8 and 36 have been cancelled.

#### *Claim Objections*

Claim 44 is objected to because of the following informalities:

Claim 44 is identical to claim 43. Please cancel claim 44.

Appropriate correction is required.

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 5, 6, 13-16, 21-24, 29, 30, 35, 37, 40, and 50 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,872,906 of Morita et al. referred hereinafter “Morita”.

In regards to claim 5, Morita discloses  
identifying all of the disks in the volume (see figure 7 and 8 and column 8 lines 14-36);  
obtaining disk characteristics, respectfully, from all of the disks in the volume (see figure 7 and 8 and column 8 lines 14-36);  
comparing the disk characteristics with a set of policies and characteristics of  
spare disks (see figure 14 and column 11 line 53 to column 12 line 24); and

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alerting an administrator if a more optimal configuration of which disks are used in the volume and which disk are spare is possible. Morita discloses if a notification of a device error such as a hard error or the like which cannot be recovered is received from the disk unit, the spare disk selection section (of the controller) selects a spare disk to replace it (see column 8 lines 37-48), thus indicating a optimal configuration of which disks are used in the volume and which disk are spare.

In regards to claim 6, Morita discloses

reconfiguring the disks into the more optimal configuration. Morita discloses, the spare disk selection section (of the controller) selects a spare disk to replace it (see column 8 lines 37-48), thus indicating reconfiguring the disks into the more optimal configuration.

In regards to claim 13, 21, 29, and 35, Morita discloses:

a storage adapter to connect a plurality of disk storage units in the network storage system (see figure 4 items 24-1, 26-6 and column 6 lines 17-36).

an operating system to maintain a plurality of volumes, each volume associated with a set of disk storage units, the set of storage units selected from a plurality of disk storage units. Morita discloses a controller with a disk array control section, indicating a operating system (see column 11 lines 20-25) and further discloses logical device groups, indicating a plurality of volumes, each volume associated with a set of disk storage units, the set of storage units selected from a plurality of disk storage units (see figure 13 and column 11 lines 20-52).

the operating system maintaining a plurality of spare disks selected from the plurality of disk storage units (see column 2 lines 33-46).

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the operating system choosing a best spare disk of the plurality of spare disks to replace a failed disk, the failed disk associated with any volume of the network storage system (see column 2 lines 33-46).

the operating system replacing the failed disk with the best spare disk (see column 2 lines 33-46).

In regards to claim 14 and 22, Morita discloses:

establishing at least one file server in the network storage system and performing the step of choosing a best spare disk by the at least one file server (see figure 4 and column 8 lines 37-51).

In regards to claim 15 and 23, Morita discloses:

establishing at least one file server in the network storage system and performing the step of choosing a best spare disk by the at least one file server (see figure 4 and column 8 lines 37-51).

In regards to claim 16, 24, and 30, Morita discloses:

determining the best spare disk by selecting those spare disk from the plurality of spare disks which meet at least one selection rule (see figure 14 and column 11 lines 53-60).

In regards to claim 37, Morita discloses wherein the best spare disk is chosen based upon physical proximity to the failed disk (see figure 1; column 1 lines 25-35 and column 2 lines 36-46);

In regards to claim 40 and 50, Morita discloses

identifying a set of spare storage devices in the network storage system (see figure 1; column 1 lines 25-35 and column 2 lines 36-46);

selecting a particular spare storage device of the set of spare storage devices to replace the failed storage device, the particular spare storage device selected using a proximity policy in which preference is given to a spare storage device physically closest to the failed storage in the network storage system (see figure 1; column 1 lines 25-35 and column 2 lines 36-46).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17-19, 25-27, and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita.

In regards to claims 17, 25, and 31, Morita discloses:

sorting disks in accordance with policies, and assigning a score to each disk as a result of the sorting. Morita discloses setting a priority order value or score for each spare disk relating to each logic device (see figure 14 and column 11 lines 53-67).

Morita further discloses selecting base on the values or scores the best spare disk (column 12 lines 3-10)

However, Morita fails to explicitly disclose associating the highest score with the best choice. "Official Notice" is taken to set values or scores wherein the highest value or score

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represents the best. It would have been obvious to one of ordinary skill in the art at the time the invention was made to set values or scores wherein the highest value or score represents the best. A person of ordinary skill in the art at the time of the invention would have been motivated because Morita discloses selecting the best spare disk, and setting values or scores wherein the highest value or score represents the best is well known for determining and selecting the best.

In regards to claim 18, 26, and 32, Morita discloses:

determining those disks of the plurality of spare disks which meet at least one selected rule to form a selected pool of disk (see figure 14 and column 11 line 53 to column 12 lines 23);  
sorting disk of the selected pool of disks in accordance with policies, assigning a score to each disk as a result of the sorting. Morita discloses setting a priority order value or score for each spare disk relating to each logic device (see figure 14 and column 11 lines 53-67).

Morita further discloses selecting base on the values or scores the best spare disk (column 12 lines 3-10)

However, Morita fails to explicitly disclose associating the highest score with the best choice. "Official Notice" is taken to set values or scores wherein the highest value or score represents the best. It would have been obvious to one of ordinary skill in the art at the time the invention was made to set values or scores wherein the highest value or score represents the best. A person of ordinary skill in the art at the time of the invention would have been motivated because Morita discloses selecting the best spare disk, and setting values or scores wherein the highest value or score represents the best is a well known for determining and selecting the best.

In regards to claim 19, 27, and 33, Morita discloses a selection process to select the best spare disk in the event that two or more disks appear to be equally the best spare disk. Morita

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discloses two or more disks can be provided per rank (see column 13 lines 24-25). If there are two per rank, then one has to be selected as the best spare disk.

However, Morita fails to explicitly disclose choosing at random. “Official Notice” is taken for the concept of choosing at random. It would have been obvious to one of ordinary skill in the art at the time the invention was made to choose at random. A person of ordinary skill in the art at the time of the invention would have been motivated because Morita discloses selecting one disk, from the more than one of the one or more disks that are highest-ranked, as the best spare disk, and selecting at random, is well known and used means of selecting.

Claims 1, 2, 3, 7, 9, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita in view of US Patent No. 6,317,844 of Kleiman referred hereinafter “Kleiman”

In regards to claim 1, 9, and 11, Morita discloses:

identifying a set of spare disks, the set of spare disks attached to the network storage system (see figure 4 and column 2 lines 33-40 and column 6 lines 33-36);

choosing a best spare disk of the set of spare disks, the best spare disk chosen according to a plurality of user-selectable policies. Morita discloses selecting spare disk according to a set of policies (ranking order) (column 2 lines 33-46). Before these policies can be followed, they must be initially selected or determined. Thus, there must be a user to initially select or set the policy or ranking order to follow, indicating according to a plurality of user-selectable policies.

claiming ownership of the best spare disk (see column 2 lines 33-46);

However, Morita fails to explicitly disclose:

a plurality of file servers.



Kleiman discloses a two file server system wherein the system can failover from a first filer to a second filer (see column 2 lines 10-13), indicating a plurality of file servers.

It would have been obvious for one of ordinary skill in the art at the time of the invention was made to combine the teachings to have a two filer system wherein the system can failover from a first filer to a second filer (see column 2 lines 10-13), indicating a plurality of filers. A person of ordinary skill in the art at the time of the invention would have been motivated because Morita is concerned with error recovery (see column 1 lines 63) and having a two filer system wherein the system can failover from a first filer to a second filer (see column 2 lines 10-13), as per teaching of Kleiman, provides error recovery for a failing filer.

In regards to claim 2, Morita discloses  
choosing, in response to a failure of the step of claiming ownership, a next best spare disk of the spare disks available (see column 2 lines 33-46); and  
claiming ownership of the next best spare disk (see column 2 lines 33-46);.

In regards to claim 3, Morita discloses  
setting a first ownership attribute to a file server-owned state (see figure 7 and 8; column 8 lines 14-36 and column 9 lines 45-50);

setting a second ownership attribute to a file server-owned state (see figure 7 and 8; column 8 lines 14-36 and column 9 lines 45-50);

In regards to claim 7, Morita discloses  
selecting one or more disks from the set of spare disks, said set of disks satisfy one or more hard coded rules (see figure 14 and column 11 line 53 to column 12 lines 23);

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sorting the one or more disks (see figure 14 and column 11 line 53 to column 12 lines 3) using a set of user-selectable policies. Morita discloses selecting spare disk according to a set of policies (ranking order) (column 2 lines 33-46). Before these policies can be followed, they must be initially selected or determined. Thus, there must be a user to initially select or set the policy or ranking order to follow, indicating according to a plurality of user-selectable policies

if only one disk is highest-ranked, selecting the one disk that is highest-ranked as the best spare disk(see column 12 lines 3-7); and

if a plurality of disks are highest-ranked, selecting one disks from the plurality of disks that are highest ranks as the best spare disk. Morita discloses two or more disks can be provided per rank (see column 13 lines 24-25). If there are two per rank, then one has to be selected as the best spare disk.

However, Morita fails to explicitly disclose:

a plurality of filers.

Kleiman disclose a two file server (filer) system wherein the system can failover from a first filer to a second filer (see column 2 lines 10-13), indicating a plurality of filer.

It would have been obvious for one of ordinary skill in the art at the time of the invention was made to combine the teachings to have a two filer system wherein the system can failover from a first filer to a second filer (see column 2 lines 10-13), indicating a plurality of filers. A person of ordinary skill in the art at the time of the invention would have been motivated because Morita is concerned with error recovery (see column 1 lines 63) and having a two filer system wherein the system can failover from a first filer to a second filer (see column 2 lines 10-13), as per teaching of Kleiman, provides error recovery for a failing filer.

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In regards to claim 10, Morita discloses

means for selecting one or more disks from the set of spare disks that satisfy one or more hard-coded rules (see figure 14 and column 11 line 53 to column 12 line 23);

means for sorting the set of disks according to the plurality of user-selectable policies (see figure 14 and column 11 line 53 to column 12 line 3);

means for a highest-ranked disk as the best spare disk (see column 12 lines 3-7); and

Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita in view of Kleiman.

In regards to claim 4 and 12, Morita discloses

selecting one or more disks from the set of spare disks that satisfy one or more hard-coded rules (see figure 14 and column 11 line 53 to column 12 line 23);

sorting the one or more disks selected from the set of spare disks according to the plurality of user-selectable policies to identify a highest-ranked disk (see figure 14 and column 11 line 53 to column 12 line 3);

choosing a highest-ranked disk as the best spare disk (see column 12 lines 3-7); and

choosing, in response to more than one of the one or more disks being highest-ranked, one disk, from the more than one of the one or more disks that are highest-ranked, as the best spare disk. Morita discloses two or more disks can be provided per rank (see column 13 lines 24-25). If there are two per rank, then one has to be selected as the best spare disk.

However, Morita in view of Kleiman fails to explicitly disclose choosing at random.

“Official Notice” is taken for the concept of choosing at random. It would have been obvious to

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one of ordinary skill in the art at the time the invention was made to choose at random. A person of ordinary skill in the art at the time of the invention would have been motivated because Morita discloses selecting one disk, from the more than one of the one or more disks that are highest-ranked, as the best spare disk, and selecting at random, is well known and used means of selecting.

Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morita in view of US Patent No. 6,760,862 of Schreiber et al. referred hereinafter "Schreiber".

In regards to claim 38, Morita fails to explicitly disclose:

wherein the best spare disk is chosen based upon a comparison of the storage space of the spare disks and the failed disk

Schreiber discloses when replacing a failed disk with a spare disk, checking to make sure the spare has an appropriate size (see column 1 lines 55-60), indicating a comparison of the storage space of the spare disks and the failed disk.

It would have been obvious for one of ordinary skill in the art at the time of the invention was made to combine the teachings of Morita and Schreiber to check to make sure a spare disk has an appropriate size when replacing a failed disk with a new disk. A person of ordinary skill in the art at the time of the invention would have been motivated because Morita discloses replacing a failed disk with a spare (see column 2 lines 36-46) and checking that the spare has appropriate size, as per teachings of Schreiber, makes sure there is enough space to hold all of the information from the failed disk (see column 1 lines 55-60).

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morita in view of US Patent No. 5,790,782 of Martinez et al. referred hereinafter "Martinez".

In regards to claim 41, Morita fails to explicitly disclose:

wherein the proximity policies gives preference to a spare storage device on a same self as the failed storage device.

Martinez discloses a RAID of disk drives encompassed within a shelf (see column 5 lines 10-15).

It would have been obvious for one of ordinary skill in the art at the time of the invention was made to combine the teachings of Morita and Martinez to incorporate a RAID within a shelf. A person of ordinary skill in the art at the time of the invention would have been motivated because Morita discloses a RAID disk array (see figure 1 and column 1 lines 25-50) and shelf, as per teachings of Martinez, provides a known and suitable housing for a RAID disk array (see column 5 lines 10-15). When the RAID disk array, as disclosed in Morita, is within a shelf, then all the spare disk of the RAID disk array is also within the shelf, hence, preference is given to a spare storage device on a same shelf as the failed storage device.

Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morita in view of US Patent No. 6,513,097 of Beardsley et al. referred hereinafter "Beardsley".

In regards to claim 42, Morita fails to explicitly disclose:

wherein the proximity policies gives preference to a spare storage device on a same loop as the failed storage device.

Beardsley discloses DASDs may be interconnected in a loop topology including multiple RAID arrays (see column 4 lines 48-50).

It would have been obvious for one of ordinary skill in the art at the time of the invention was made to combine the teachings of Morita and Beardsley wherein a RAID is in a loop topology. A person of ordinary skill in the art at the time of the invention would have been motivated because Morita discloses a RAID disk array (see figure 1 and column 1 lines 25-50) and loop topology, as per teaching of Beardsley, provides a suitable and known configuration of a RAID disk array (see column 4 lines 48-50). When the RAID disk array, as disclosed in Morita, is within a loop, then all the spare disk of the RAID disk array are also within the loop, hence, preference is given to a spare storage device on a same loop as the failed storage device.

Claims 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita in view of Applicant's Admitted Prior Art referred hereinafter "AAPA".

In regards to claim 43 and 44, Morita fails to explicitly disclose:  
wherein the proximity policies gives preference to a spare storage device on a same switch as the failed storage device.

AAPA discloses it is known for disk to be connected to a switch network, such as a Fiber Channel Switch (see page 2 of Specification).

It would have been obvious for one of ordinary skill in the art at the time of the invention was made to combine the teachings of Morita and Beardsley wherein a disk array are connected to a switch network. A person of ordinary skill in the art at the time of the invention would have been motivated because Morita discloses a disk array (see figure 1 and column 1 lines 25-50) and

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having a switch network, as per teaching of AAPA, enables other filers or devices to see, and read from, all of the disks connected to the switching network (see page 2 of Specification).

When the RAID disk array, as disclosed in Morita, is on a switch, then all the spare disk of the RAID disk array is also on the switch, hence, preference is given to a spare storage device on a same switch as the failed storage device.

*Allowable Subject Matter*

Claim 39 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 20, 28, and 34 are allowed for reasons stated in a previous office action.

Claims 45-49, 51, and 52 are allowed.

The following is an Examiner's statement of reasons for the indication of allowable subject matter: Claims 45, 46, 51, and 52 are allowable over the prior art of record because the Examiner found neither prior art cited in its entirety, nor based on the prior art, found any motivation to combine any of the said prior arts.

The reason for allowance for claims 45 and 51 is the inclusion of a size policy in which preference is given to a spare storage device with minimum storage space in excess of the storage space of the failed disk in conjunction with the rest of the limitation set forth in the claim.

The reason for allowance for claims 46 and 52 is the inclusion of a speed policy in which preference is given to a spare storage device with a speed closest to that of the failed disk in conjunction with the rest of the limitation set forth in the claim.

The remaining claims, not specifically mentioned, are allowed because they are dependent upon one of the claim mentioned above.

### *Response to Arguments*

Applicant's arguments filed February 22, 2006 have been fully considered but they are not deemed to be persuasive.

In response to applicant's argument that "Morita is silent concerning the Applicant's claimed 'alerting an administrator if a more optimal configuration of which disk are used in the volume and which disk are spare is possible.'

Morita simply selects a most preferred spare disk in a disk array. Morita apparently does not address the possibility that subsequently, the array may be reconfigured and the previously most preferred disk may no longer be the currently most preferred disk. In such situations, reconfiguration of the disks into a more optimal configuration is often desirable. To address this shortcoming, the Applicant novelly claims alerting...if a more optimal configuration of which disks are used in the volume and which disks are spare is possible. In this way the shortcomings of the prior art, such as Morita, are overcome,"(see bottom of page 16) examiner respectfully disagrees.

Morita discloses the controller being notified or alerted of a failed disk unit and to select a spare disk to replace it (see column 8 lines 37-48). Since using a spare disk as a one of disk in



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the volume is obviously more optimal than using the failed disk in the volume and keeping the spare disk unused, Morita discloses alerting...if a more optimal configuration of which disks are used in the volume and which disks are spare. Examiner maintains his rejection.

In response to “the array may be reconfigured and the previously most preferred disk may no longer be the currently most preferred disk, ” such limitation is not disclosed in the claim language. Argument is moot. Examiner maintains his rejection.

In response to “The Applicant respectfully urges that both Morita and Kleiman are silent concerning the Applicant’s claimed ‘the best spare disk chosen according to a plurality of user selectable policies,’ ” (see page 18) examiner respectfully disagrees.

Morita discloses selecting spare disk according to a set of policies (ranking order) (column 2 lines 33-46). Before these policies can be followed, they must be initially selected or determined. Thus, there must be a user to initially select or set the policy or ranking order to follow, indicating according to a plurality of user-selectable policies. Examiner maintains his rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emerson C. Puente whose telephone number is (571) 272-3652. The examiner can normally be reached on 8-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert W. Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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PATENT EXAMINER  
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